

(19)



Europäisches Patentamt

European Patent Office

Office européen des brevets



(11)

EP 1 146 684 A2

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
17.10.2001 Bulletin 2001/42

(51) Int Cl.7: H04L 9/00

(21) Application number: 01303244.6

(22) Date of filing: 05.04.2001

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE TR
Designated Extension States:
AL LT LV MK RO SI

(72) Inventors:
• Taylor, Keith M.
Corvallis, OR 97330 (US)
• Miller, Robert M.
Corvallis, OR 97330 (US)
• Kerr M. John
Albany, OR 97321 (US)

(30) Priority: 10.04.2000 US 546059

(71) Applicant: Hewlett-Packard Company
Palo Alto, CA 94304 (US)

(74) Representative: Colgan, Stephen James et al
CARPMAELS & RANSFORD
43 Bloomsbury Square
London WC1A 2RA (GB)

(54) Limited printing of electronically transmitted information

(57) Limited printing of a source document (11) is performed. The source document (11) is encrypted to produce an encrypted document (15). The encrypted document (15) is combined with program objects (16) to form a limited print document (18). The limited print

document (18) is received by a user. Upon the user executing the limited print document (18), the program objects (16) are run. The program objects (16) oversee decryption of the encrypted document (15) and printing the source document (11) on a printer (41).

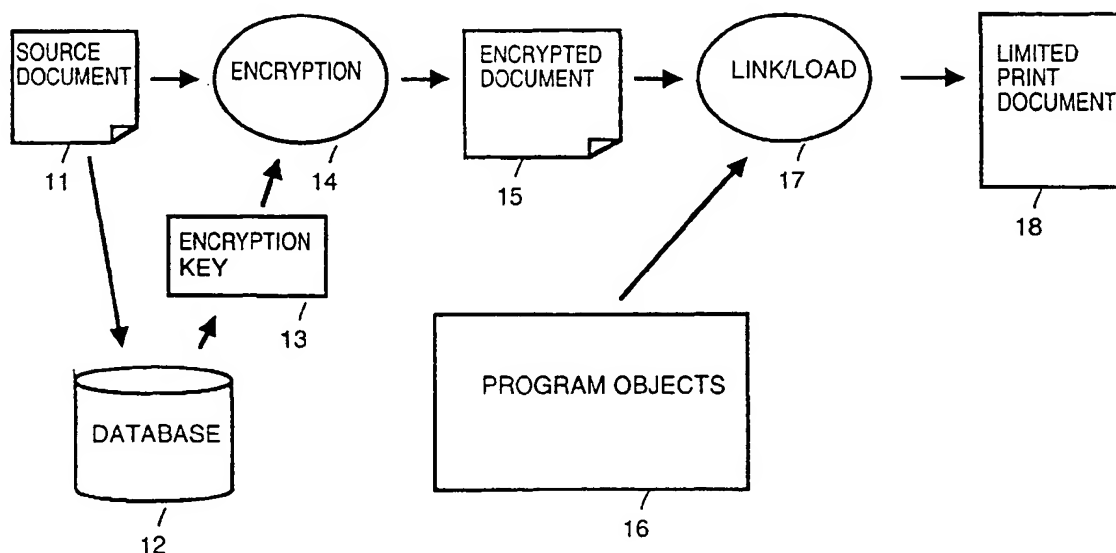


FIGURE 1

EP 1 146 684 A2

cally and at the same time prevent the recipient (user) from easily printing out multiple copies of the document or redistributing the electronic form of the document to others. Limited print documents can be used to deliver documents for payment or for delivery of documents based on digital signature.

[0016] A limited print document is encapsulated in a program file. On a personal computer (PC), the limited print document is delivered, for example, as an executable .exe file. The source document inside the limited print document is encrypted so that the source document can not be easily extracted by taking apart the limited printed document.

[0017] Figure 1 is a simplified block diagram that illustrates the construction of a limited print document 18. The process starts with a source document 11. For example, source document 11 is authored with a standard document preparing tool (e.g. Microsoft Word available from Microsoft Corporation, Adobe Photoshop available from Adobe Systems, Inc., Quark Express or another of many available applications) and stored, for example, in a common document transfer format such as Adobe Portable Document Format (PDF), developed by Adobe Systems, Inc. Alternatively, source document 11 may be stored in any format which is printable.

[0018] Source document 11 is encrypted using an encryption tool 14. For example, encryption tool 14 utilizes the Data Encryption Standard (DES) or the International Data Encryption Algorithm (IDEA). In a database 12, the association of an encryption key 13 used for the encryption and source document 11 is stored. Encryption tool 14 produces an encrypted document 15.

[0019] A program linker/loader 17 links encrypted document 15 with program objects 16 to produce limited print document 18. Program objects 16 are, for example, ".obj" files that perform the installation, decryption, and printing of limited print document 18 on an end user system. Program linker/loader 17 is, for example, a standard linker/loader such as that available in Microsoft Visual C++ 6.0. Limited print document 18 thus contains the program objects 16 and the contents of encrypted document 15.

[0020] Figure 2 is a simplified block diagram that illustrates the download and installation of limited print document 18 by a user (buyer, document consumer). The user browses to the document provider's web site and selects a document for download. For example, the user selects limited print document 18 from provider database 21. The user downloads limited print document 18 using normal mechanisms within a web browser 29. Installation software within limited print document 18 is run in order to record particulars 27 of the document download. Particulars 27 include system name, file name, date and time, and so on. The provider performs a record installation 24 of particulars 27 in a database 23. A unique installation identifier 26 is recorded in database 23 along with particulars 27. Unique installation identifier 26 is also sent to the user where installation

identifier 26 is sorted along with limited print document 18 in a user storage area 30.

[0021] The installation software can be run manually by the user, or can execute automatically upon download via Multipurpose Internet Mail Extensions (MIME) types in web browser 29. Alternatively, running of the installation software can be deferred until just before printing rights are purchased. Automating the installation with the use of MIME types requires web browser 29 to be configured to run pre-installed software when it encounters a limited print document identified by a new "limited print document" MIME type.

[0022] Figure 3 is a simplified block diagram that illustrates the purchase of printing rights of limited print document 18. During purchase, the user supplies to the provider unique installation identifier 26 along with, for example, credit card information 36, which provider can verify, for example, using a financial institution 35, accessed via the internet 22.

[0023] Through a purchase decryption key process 34, installation identifier match 32 is performed to confirm a corresponding installation identifier is stored in database 31. Once payment has been confirmed and a match has been made, a decryption key 33 is forwarded through internet 22 to the user and stored in storage 30 along with install identification 26 and limited print document 18.

[0024] Figure 4 is a simplified block diagram that illustrates the beginning of the process to print limited print document 18. Limited print document 18 contains program objects (e.g., .obj files) which perform printing functions. When a user executes limited print document 18, limited print client 49 (a running version of the program objects) from within limited print document is run. Before performing any printing, limited print client 49 checks the validity of the installation using unique installation identification 26. This is done, for example, by sending unique installation identification 26 through the internet 22 to a validate print request process 41 within the provider domain. Installation identifier match 42 is performed to confirm a corresponding installation identifier is stored in database 31. Depending upon the success of the match, a return message 43 indicating "Go" or "No Go" indicates whether the print may be performed. When the "Go" message has been received, limited print client 49 uses decryption key 33 to decrypt the data contents of limited print document 18 to recover source document 11. Limited print client 49 then prints source document 11 on a printer 41 that is part of or attached to the user computer system.

[0025] Figure 5 is a simplified block diagram that illustrates the completion of the process to print limited print document 18. After printing source document 11, limited print client 49 waits for the user to acknowledge that a good copy of source document 11 was printed. The user gives the acknowledgement through use of a dialog window or other familiar user interface mechanism on the user computer system. Alternatively, the acknowledge-

(d.1) using an installation identifier (26) to confirm permission to print the source document (11), including the following substeps:

forwarding the installation identifier (26) through the internet (22) to a document provider,
checking the installation identifier (26) by the document provider against information stored in a database (31), and
forwarding by the document provider to the program objects (16) an indication as to whether permission is confirmed; and,

(d.2) upon confirmation of permission to print the source document (11), performing the following substeps:

decrypting the encrypted document (15),
printing the source document (11) on the printer (41), and upon completion of printing, destroying the limited print document (18).

3. A method as in claim 1 wherein in step (d) upon running the program objects (16), the following substeps are performed:

(d.1) using an installation identifier (26) to confirm permission to print the source document (11), including the following substep:

comparing the installation identifier (26) with identification information pertaining to a computing system on which the programming object is running to determine whether a computing system on which the program objects (16) are running is authorized to perform a print; and,

(d.2) upon confirmation of permission to print the source document (11), printing the source document (11) on the printer (41).

4. A method as in claim 1 wherein in step (c) includes the following substeps:

(c.1) purchasing, by the user, rights to print the source document (11).

5. A method as in claim 1 wherein in step (c) includes the following substeps:

(c.1) receiving, by the user, a decryption key to be used for decrypting the encrypted document (15) in response to the user purchasing rights to print the source document (11).

6. A limited print document (18) comprising:

an encrypted document (15) that when decrypted is a source document (11); and,

program objects (16) which when run on a computing system oversee decryption of the encrypted document (15) and printing the source document (11) on a printer (41).

7. A limited print document (18) as in claim 6 wherein the program objects (16) use an installation identifier (26) to confirm permission to print the source document (11), and upon confirmation of permission to print the source document (11), decrypting the encrypted document (15), printing the source document (11) on the printer (41), and upon completion of printing the program objects (16), destroying the limited print document (18).

8. A limited print document (18) as in claim 6 wherein the program objects (16) use an installation identifier (26) to confirm permission to print the source document (11), forwarding the installation identifier (26) through the internet (22) to a document provider to determine whether there exists permission to print the source document (11) on the printer (41).

9. A limited print document (18) as in claim 6 wherein the program objects (16) use an installation identifier (26) to confirm permission to print the source document (11) by comparing the installation identifier (26) with identification information pertaining to a computing system on which the programming object is running to determine whether a computing system on which the program objects (16) are running is authorized to perform a print of the source document (11).

10. A limited print document (18) as in claim 6 wherein the program objects (16) use a decryption key to be used for decrypting the encrypted document (15), the decryption key being received in response to purchasing of rights to print the source document (11).

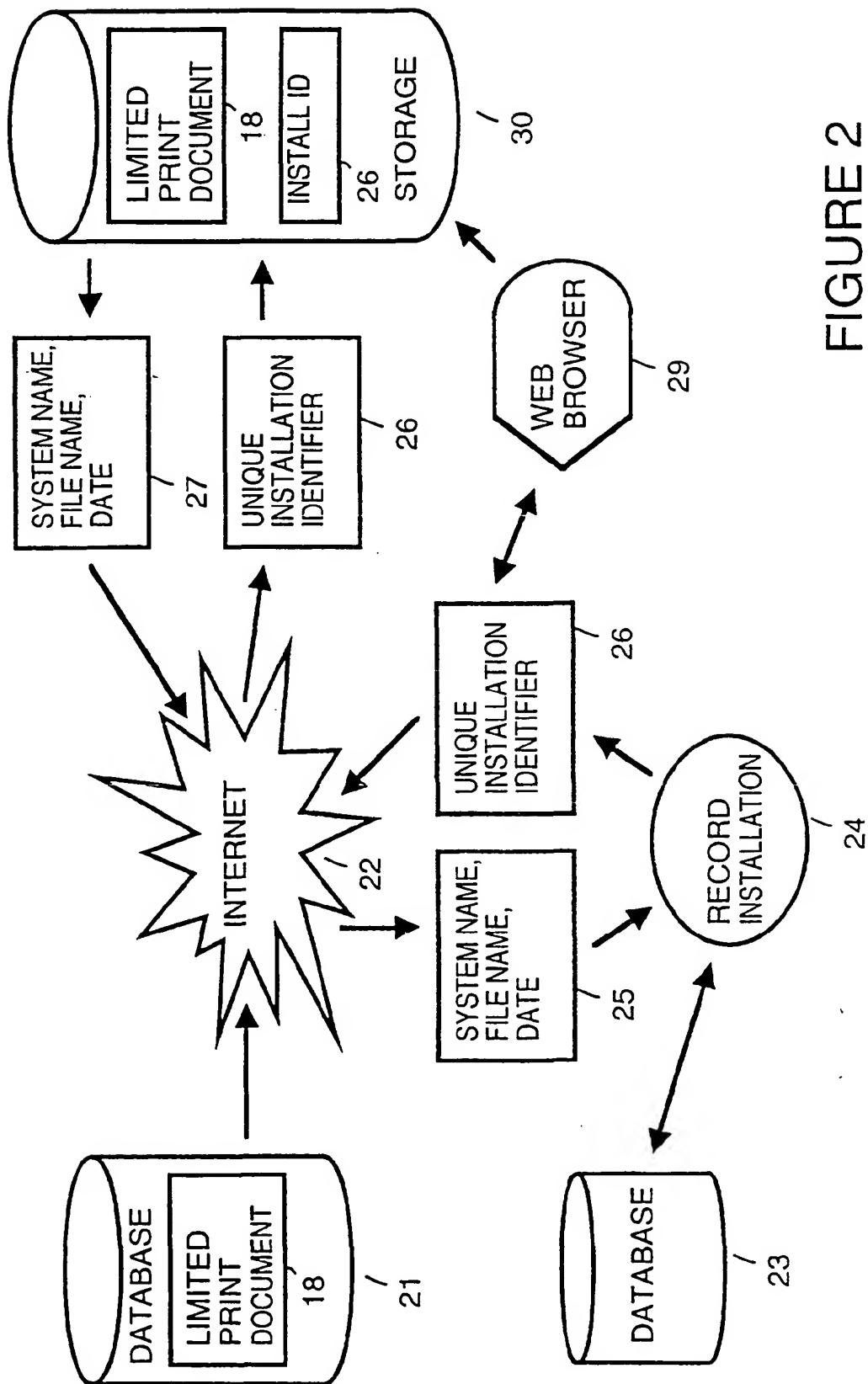


FIGURE 2

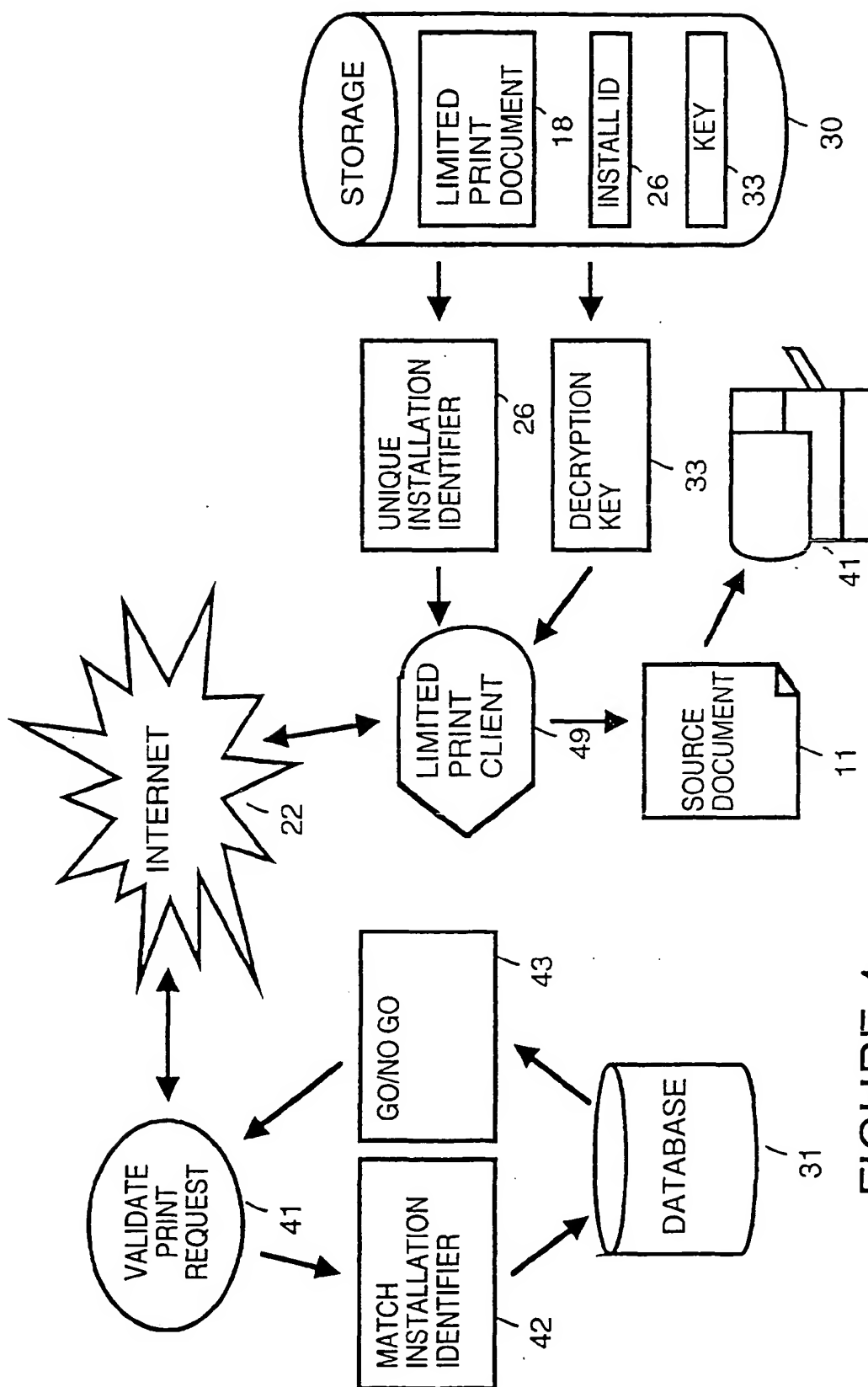


FIGURE 4

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 1 146 684 A3

(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
12.03.2003 Bulletin 2003/11

(51) Int Cl.7: H04L 9/00

(43) Date of publication A2:
17.10.2001 Bulletin 2001/42

(21) Application number: 01303244.6

(22) Date of filing: 05.04.2001

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE TR
Designated Extension States:
AL LT LV MK RO SI

(72) Inventors:
• Taylor, Keith M.
Corvallis, OR 97330 (US)
• Miller, Robert M.
Corvallis, OR 97330 (US)
• Kerr M., John
Albany, OR 97321 (US)

(30) Priority: 10.04.2000 US 546059

(71) Applicant: Hewlett-Packard Company
Palo Alto, CA 94304 (US)

(74) Representative: Carpmaels & Ransford
43 Bloomsbury Square
London WC1A 2RA (GB)

(54) Limited printing of electronically transmitted information

(57) Limited printing of a source document (11) is performed. The source document (11) is encrypted to produce an encrypted document (15). The encrypted document (15) is combined with program objects (16) to form a limited print document (18). The limited print

document (18) is received by a user. Upon the user executing the limited print document (18), the program objects (16) are run. The program objects (16) oversee decryption of the encrypted document (15) and printing the source document (11) on a printer (41).

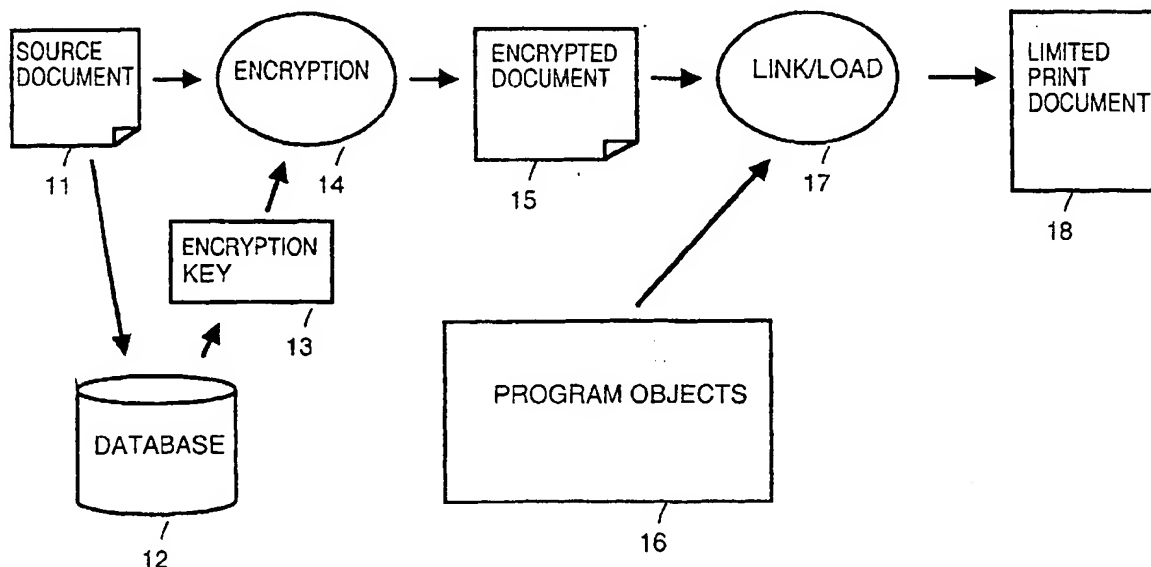


FIGURE 1

EP 1 146 684 A3

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 01 30 3244

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

16-01-2003

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
EP 0665486	A	02-08-1995	US	5509074 A	16-04-1996
			CA	2137065 A1	28-07-1995
			EP	0665486 A2	02-08-1995
			JP	3121738 B2	09-01-2001
			JP	7239828 A	12-09-1995

EP 0653695	A	17-05-1995	US	5625690 A	29-04-1997
			CA	2133237 A1	16-05-1995
			CN	1139324 A	01-01-1997
			EP	0653695 A2	17-05-1995
			JP	7200286 A	04-08-1995
			SG	43920 A1	14-11-1997

WO 9811690	A	19-03-1998	US	6052780 A	18-04-2000
			AU	4269497 A	02-04-1998
			EP	0932955 A1	04-08-1999
			JP	2001521654 T	06-11-2001
			WO	9811690 A1	19-03-1998
			US	6185686 B1	06-02-2001

US 5633932	A	27-05-1997	WO	9833293 A1	30-07-1998
			AU	2112497 A	18-08-1998
			DE	19782258 T0	24-02-2000
			GB	2336512 A ,B	20-10-1999

EPOFORM/16455

For more details about this annex : see Official Journal of the European Patent Office, No 12/82